

## PUBLIC HEALTH RESEARCH

### Community Awareness and Attitudes towards Influenza Outbreak and Prevention in Serian, Sarawak

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#### ABSTRACT

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| <b>Accepted</b>     | 22 August 2013   |
| <b>Introduction</b> | To date, there has been no systematic research that investigates the rural community awareness and attitudes towards pandemic influenza H1N1 and its prevention measures in the context of Sarawak.  |
| <b>Objective</b>    | There is also no systematic study about whether the initiatives to educate the public undertaken by the government and other agencies have empowered the rural communities to practice an effective self-care within the context of community, that assist to curb the potential spread of this disease.   |
| <b>Methods</b>      | Our research aims to address these limitations. In this paper, we report a survey finding about the awareness and attitudes of the Serian community with regard to this area of research interest. We also investigate the relevant sources of information that the community relies on in understanding about the influenza and how it can spread.  |
| <b>Results</b>      | Overall, the outcomes of the survey reveal that a majority of our respondents has a relatively low level of knowledge and awareness particularly about the characteristics of the illness and how H1N1 virus can transmit. With regard to prevention measures, a majority of them reported good understanding and awareness about the effective self-care practices that can help to curb the potential spread of the influenza. |
| <b>Conclusions</b>  | The top five sources to obtain information about the influenza were: information from family, relatives, friends or neighbours; radio; TV; newspapers; and government health talk seminar or campaigns. The research outcomes can offer pragmatic contributions that can benefit the health campaigners and policy makers.   |
| <b>Keywords</b>     | Rural communities - Influenza - Pandemic outbreak - Sarawak.   |

## INTRODUCTION

To date, there have been many reported disease outbreaks all over the world. The World Health Organization (WHO) via its website at [www.who.int/csr/don/](http://www.who.int/csr/don/) has disseminated many valuable data and information to systematically inform and track the trends and outbreaks in various continents and regions. With regard to global influenza outbreak, WHO Global Influenza Surveillance Network (GISN) has played an important role to monitor the progression and global spread of the viruses<sup>1</sup>.

According to Grist<sup>2</sup>, 'epidemic influenza remains the biggest and unconquered acute threat to human health, inflicting damage and death far beyond familiar notification data' and 'the impact of influenza A is particularly severe during periodic pandemics owing to novel antigenic variants which override immunity from experience of earlier subtypes'. H1N1 influenza or commonly known as swine flu is a respiratory illness of pigs caused by type A influenza virus. Two or more different strains of this virus from different host may combine to form a new subtype having a mixture of the surface antigens and it may cause pandemic outbreak. The World Health Organization (WHO) officially confirmed on June 11, 2009 that the H1N1 influenza outbreak, which started in early 2009, had reached global pandemic levels<sup>3</sup>. A new strain of influenza A virus subtype H1N1 was first identified in April 2009 in Mexico<sup>3</sup>.

According to the report by GISN<sup>1</sup>, the 2009 H1N1 global pandemic outbreak has introduced several challenges particularly in the aspects related to 'detection, identification and characterization of the pandemic virus and the rapid subsequent development of candidate vaccine viruses'. At the country level, GISN has continued to call for more constructive efforts to engage various stakeholders from different sectors and entities to contribute together for advanced preparation and planning to tackle for any potential national pandemic outbreak<sup>1</sup>.

In the context of Malaysia, as of 13 March 2010, the Ministry of Health (MOH) recorded about 12, 535 cases of positive influenza A (H1N1)<sup>4</sup>. Malaysia has experienced its first pandemic H1N1 outbreak between April and September 2009<sup>5</sup>. The Malaysian government via the role of MOH has utilized a variety of communication media and

technologies to communicate and disseminate information pertaining to the H1N1 infection and its prevention measures. The MOH then has further set up a website at <http://h1n1.moh.gov.my> to disseminate critical and up-to-date information to educate the public about the spread of the influenza.

Whilst there have been continuous efforts to educate the public with regard to the threat of influenza and its prevention measures, we found no systematic research yet that investigates the rural community awareness and attitudes towards this infectious disease in the context of Sarawak. There is also no systematic study about whether the initiatives to educate the public undertaken by the government and other agencies have empowered the rural communities to practice an effective self-care within the context of community, which can help to curb the potential spread of this infectious disease. Our research aims to address these limitations in the literature. In this paper, we report our research findings with regard to awareness and attitudes towards influenza outbreak and its prevention strategies among the community of Serian, Sarawak. Our specific objectives of this study are as follows: (1) to assess the level of awareness and attitudes of Serian community with regard to the influenza illness and outbreak, and its effective prevention measures; and (2) to identify the common mechanisms and communication media that the community utilizes to obtain information about the disease.

This paper is structured as follows. Section 2 explains the research background and setting which are situated in the context of rural communities in Sarawak. An overview of Serian area and the surrounding communities is presented in this section. Section 3 provides further elaboration about our research design and methods. Section 4 presents and discusses the survey findings. Finally, Section 5 provides a conclusion and highlights few recommendations to benefit the rural communities in dealing with influenza outbreaks.

## BACKGROUND AND SETTING

*Serian District of Sarawak*

## Awareness and Attitudes towards Infeluzna



**Figure 1** Location of Sarawak

Sarawak is located on the island of Borneo and, is also famously known as “Land of the Hornbills”. Based on the published statistics<sup>7</sup>, Sarawak population in 2010 is 2,399,839 million. The annual population growth rate was reported at 1.4 percent in 2010. Sarawak is also the largest state in Malaysia with a recorded land area about 124, 450km<sup>2,8</sup>. The three largest ethnics of Sarawak are Iban, Chinese, and Malay; then followed by Bidayuh, Orang Ulu – Kayan, Lun Bawang, Kelabit, Kenyah, Penan, Bisaya -, Melanau and others. Currently, Sarawak consists of 11 divisions. Serian District is within Samarahan Division, and it has one sub-district, which is Tebedu.

In 2010, Serian District recorded about 89,078 populations<sup>9</sup>. Out of this, about 59% (52,886) of the population is of the Bidayuh ethnic group. The remaining groups are from Iban (16%), Malays (12%), Chinese (9%) and others (4%). There are more than 100 villages in Serian District<sup>10,11</sup>. Serian Town is located about 60 kilometers from Kuching City of Sarawak. It is a small town, strategically located in between Kuching City and Sri Aman City of Sarawak. Tebedu (the sub-district of Serian) is located at

the border of Indonesia and has had a total population of 8,204 with about 90% of the communities are from the Bidayuh ethnic group<sup>9</sup>.

### *An Overview of Sarawak Healthcare Issues and Provisions*

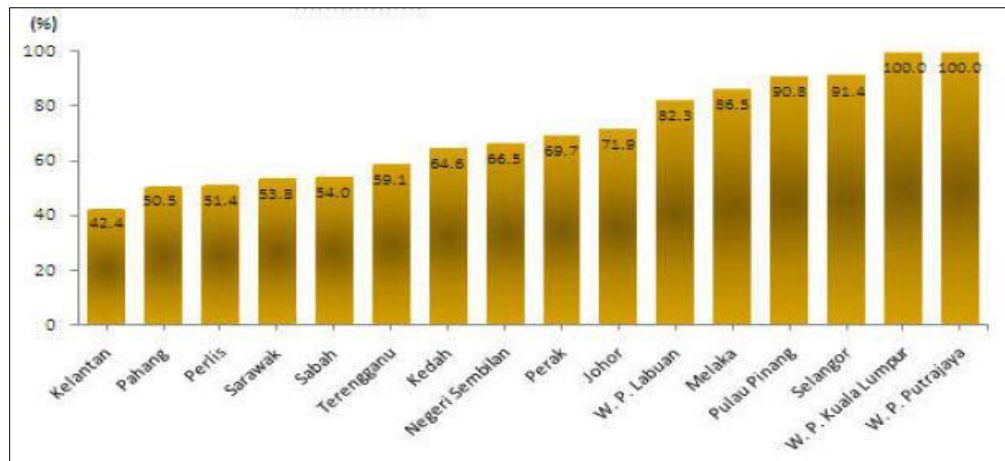
Sarawak population has a life expectancy rate recorded in 2010 at 73.8 years for male, and 77.3 years for female<sup>12</sup>. Due to Sarawak geographical location, Jin<sup>13</sup> has argued that much challenges related to Sarawak health provisions, among others, are about: ‘(i) how to deliver health services for non-communicable and diseases of lifestyle to a small, relatively low income population in a vast area with a poor communications network, and (ii) how to operate an efficient public and preventive health service, including surveillance for epidemic infectious disease’. Figure 2, which is excerpted from Jin<sup>12</sup>, shows the distribution of population of Sarawak by ethnicity and urbanization rate in 2000. In 2010 (see Figure 2), Sarawak is ranked at 13 out of 16 administrative states of Malaysia in term of level of urbanisation<sup>13</sup>.

*Table 11.1* Population of Sarawak by ethnicity and urbanization rate, 2000

| <i>Ethnicity</i>        | <i>Proportion (%)</i> | <i>Urbanization rate (%)</i> |
|-------------------------|-----------------------|------------------------------|
| Malay                   | 22.3                  | 54.8                         |
| Iban                    | 29.1                  | 28.5                         |
| Bidayuh                 | 8.0                   | 25.3                         |
| Melanau                 | 5.5                   | 36.4                         |
| Other <i>Bumiputera</i> | 5.7                   | 22.3                         |
| Chinese                 | 25.9                  | 78.7                         |
| Others                  | 0.4                   | 64.5                         |
| Non-citizens            | 3.0                   | 54.8                         |
| Total                   | 100.0                 | 48.1                         |

Source: Department of Statistics, Malaysia (2001a).

**Figure 2** Population of Sarawak by ethnicity and urbanization rate, 2000



**Figure 3** Level of Urbanisation by State, Malaysia, 2000

With regard to healthcare facilities, healthcare providers such as health clinics, community clinics, mobile clinics as well as the flying doctor service play important roles in the context of rural communities who live in the remote regions of Sarawak. Tertiary and secondary care and services however are mostly located at the city and suburbs areas. Jin<sup>13</sup> highlighted that “although public health care services incur a low nominal payment in Sarawak, transport costs to and from the site of

such services are high in most regions of the state, and this does not yet take into account that accessing such care often means having to stay at least overnight at the location of the care provider, thus incurring additional costs”. The following table depicts some general figures about the healthcare facilities and the number of health professionals in Sarawak for 2007 and 2008.

## Awareness and Attitudes towards Infulezna

**Table 1** Health Facilities and Health Professionals in Sarawak, 2007 and 2008

|  | 2007     | 2008     |
|--|----------|----------|
| <i>Health Facilities</i>                                 |          |          |
| Total No. of Government Hospitals                        | 20       | 20       |
| Total No. of Beds in Government Hospitals                | 3,259    | 3,277    |
| Total No. of Private Hospitals, maternity/ nursing homes | 10       | 11       |
| Number of Health Clinics                                 | 188      | 185      |
| Number of Rural Clinics (Klinik Desa)                    | 21       | 18       |
| Number of Maternal & Child Health Clinics                | 21       | 22       |
| Number of Mobile Clinics                                 | 121      | 99       |
| <i>Health Human Resources</i>                            |          |          |
| Total No. of Doctors                                     | 1,084    | 1,151    |
| Doctor: Population Ratio                                 | 1: 2,218 | 1: 2,131 |
| Total No. of Nurses                                      | 5,246    | 5,415    |
| Nurse: Population Ratio                                  | 1: 458   | 1: 453   |
| Total No. of Community Nurses/ Midwives                  | 2,521    | 2,566    |
| Community Nurses/ Midwives: Population Ratio             | 1: 954   | 1: 956   |

Source: Health Fact 2008, Ministry of Health Malaysia

With regard to the incidence of H1N1 outbreak, the first local transmission of the influenza in Sarawak was recorded on July 5th 2009 in Bintulu<sup>4</sup>. Sarawak reported its first H1N1 related death on 4<sup>th</sup> of August 2009. It was reported in the news that the 24-year-old native woman was tested positive for the influenza A (H1N1) after giving birth and passed away at Miri Hospital<sup>4</sup>. According to the Deputy Chief Minister of Sarawak, Dr George Chan who was

also the State Disaster Relief Committee Chairman at that time, for the final two weeks of December 2010, there was an increase of reported cases of influenza-like-illness in Sarawak<sup>16</sup>. He further updated that Sarawak has had a total of 44 confirmed cases from the period of 1<sup>st</sup> January to 28<sup>th</sup> January of 2011<sup>16</sup>. Table 4 shows the number of positive cases for the illness in 2010 and 2011.

**Table 2** Positive Pandemic Influenza A (H1N1) cases for 2010 and 2011

| District      | 2010       | 2011      |
|---------------|------------|-----------|
| Lundu         | 9          | 1         |
| Bau           | 1          | 0         |
| Kuching       | 61         | 51        |
| Samarahan     | 8          | 0         |
| Simunjan      | 4          | 0         |
| <b>Serian</b> | <b>2</b>   | <b>0</b>  |
| Sri Aman      | 4          | 0         |
| Betong        | 0          | 1         |
| Sarikei       | 2          | 0         |
| Sibu          | 19         | 1         |
| Kanowit       | 1          | 0         |
| Kapit         | 1          | 1         |
| Belaga        | 0          | 1         |
| Tatau         | 0          | 0         |
| Bintulu       | 19         | 27        |
| Miri          | 7          | 6         |
| Marudi        | 1          | 0         |
| Limbang       | 20         | 2         |
| Lawas         | 2          | 1         |
| <b>TOTAL</b>  | <b>161</b> | <b>92</b> |

Source: <http://jknsarawak.moh.gov.my/bm/>

## METHODS

A cross-sectional study was conducted to obtain a baseline data for this research. We selected three locations around Serian District to distribute our survey. Neuman<sup>17</sup> highlighted that a survey method is appropriate to obtain data related to self-reported beliefs or behaviors. In constructing the survey, particularly in the areas related to knowledge and awareness about H1N1 illness, we adopted and modified questionnaires designed by Balkhy et al.<sup>18</sup>. There are three components of the survey, namely: Section A: Socio-demographic Profiles; Section B: Knowledge and Awareness about H1N1; and Section C: Sources to Obtain Information. We prepared the survey questions using both English and Malay languages to enhance the understanding of our potential respondents.

Overall, 220 questionnaires were distributed around Serian District in February 2012. Explicitly, we distributed about 120 questionnaires at two Serian villages, and another 100 questionnaires around Serian Town. One of these villages is located at the sub-district of Serian, Tebedu, near the border of Sarawak and Indonesia. 132 questionnaires were returned and analyzed. The response rate is about 60%. In distributing the questionnaires at these two villages of the Bidayuh communities, we obtained a direct assistance from the village

leaders to distribute and collect the questionnaires.

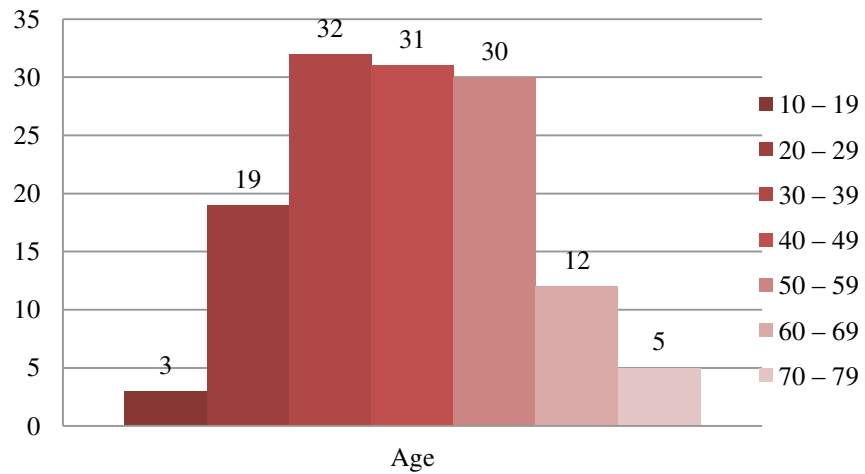
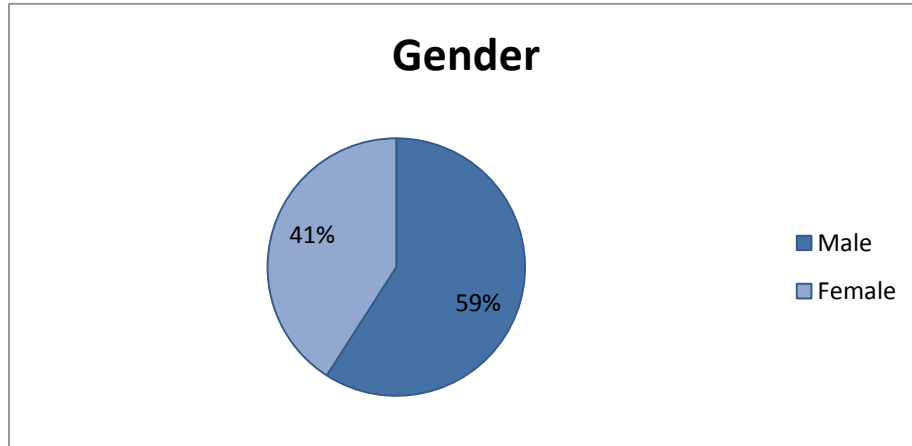
Data obtained were entered into the Statistical Package for the Social Sciences (SPSS) software. All the questions were recorded on the variable view of the SPSS software. Descriptive statistics and frequencies were used to interpret findings from this survey. The findings of the survey serve as our baseline data for our next subsequent research works for this project.

## FINDINGS AND DISCUSSION

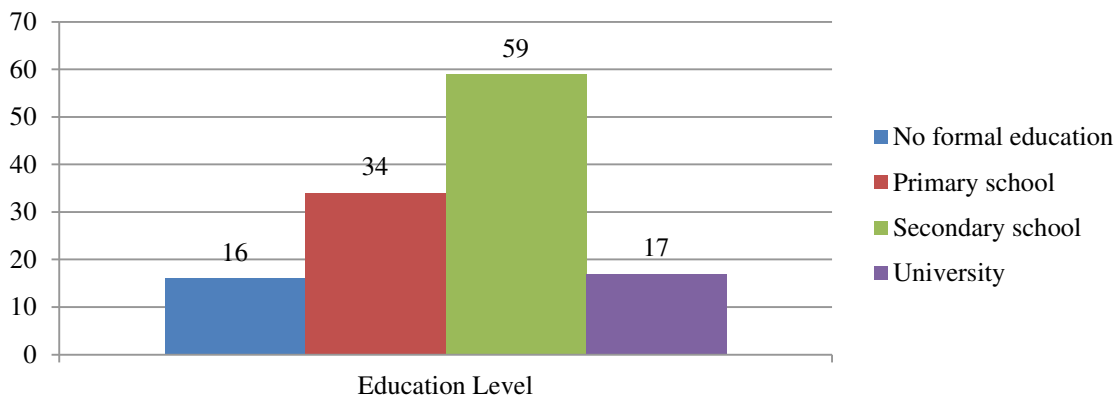
### *Socio-demographic Background*

A total of 132 respondents answered the self-administered questionnaires. The majority of respondents in the survey were male (59%). Female respondents were 41%. The age distribution for our respondents is shown in Figure 5. Overall about 85% of them were between 21 and 59 years old. The mean age of the participants was 43.52 with a standard deviation of 12.39. About 83% of our respondents (n=126) had obtained formal education (45% for secondary school; 26% for primary school; and 13% had college degree). Only 12% of the respondents did not receive any formal education. About 6 respondents did not disclose their level of education.

## Awareness and Attitudes towards Influenza



**Figure 4** Gender and Age Distribution



**Figure 5** Education level

**Table 3** Socio-demographic profiles of the respondents (n = 132)

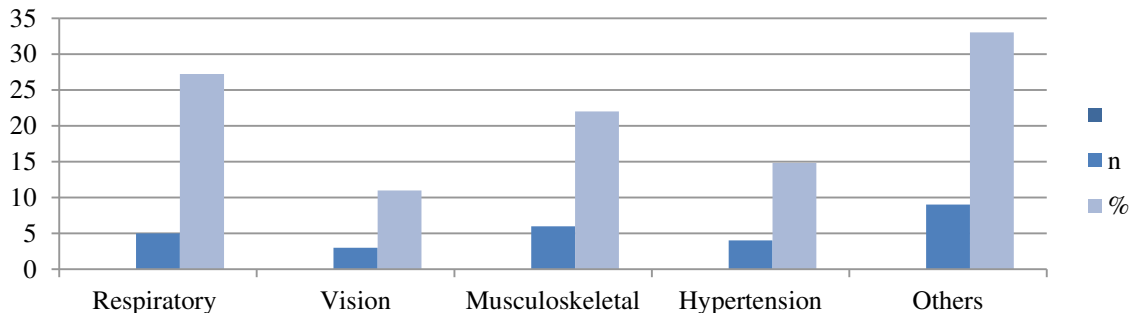
| Characteristics                                     |                           | N   | %    |
|---|---------------------------|-----|------|
| Age<br>Means: 43.52<br>SD: 12.39                    | ≥ 20 years old            | 3   | 2.4  |
|   | 21 – 59 years old         | 112 | 84.5 |
|   | ≤ 60 years old            | 17  | 13.1 |
| Household income<br>Means: 1,194.59<br>SD: 1,238.05 | Above Poverty Index Lines | 29  | 22.0 |
|   | Below Poverty Index Lines | 103 | 78.0 |
| Marital Status                                      | Single                    | 24  | 18.2 |
|   | Married                   | 93  | 70.5 |
|   | Others (Widow/ Divorced)  | 15  | 11.4 |
| Household Size <sup>1</sup>                         | 1 -5 persons              | 64  | 50.4 |
|   | 6-10 persons              | 57  | 44.9 |
|   | 11 persons and above      | 6   | 4.7  |
| Employment Status                                   | Students                  | 4   | 3.0  |
|   | Working full time         | 57  | 42.9 |
|   | Casual Work               | 7   | 5.3  |
|   | Self employed             | 33  | 24.8 |
|   | Business                  | 27  | 20.3 |
|   | Others                    |     |      |

<sup>1</sup>Five respondents did not answer the question. The percentage derived is based on the total of 127 respondents.

Table 3 depicts further the socio-demographic profiles of the respondents. With regard to marital status, a majority of our respondents were married (70%) and about 18% of them reported single. The remaining respondents were either widow or divorced. In term of household size, about 50% and 45% of the respondents reported between 1 to 5 individuals, and 6-10 individuals living together with them, respectively. About 43% of our

respondents were working full-time. With regard to household income, based on the survey findings, we found that about 103 (78%) respondents were from the group of household income under the poverty index line.

When asked about whether the respondent is “having a medical condition and require frequent visits to nearest healthcare agencies”, only 37% mentioned “Yes”.



**Figure 6** Prevalence of medication conditions among the respondents

With regard to prevalence of medication conditions among the respondents only 27

respondents responded to the question. Six respondents experienced musculoskeletal



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problems whilst nine of them reported other type of health problems including headaches, skin disease, bowel disease, eating disorders and body shivering. Figure 6 shows the breakdown of the medical conditions as reported by the respondents.

### *Knowledge and Awareness about H1N1*

Table 4 shows the survey results about the respondents' awareness and knowledge of H1N1 causes, characteristics and ways of transmitting the disease. A majority of the respondents acknowledged that virus is the causative agent of H1N1 influenza and agreed that it is an infectious disease. It is interesting to note that a majority of the respondents did not know (35%) or agreed (52%) about immunodeficiency can cause H1N1 influenza. Also, only 56% of the respondents (out of 107) acknowledged that H1N1 is not an inherited disease.

With regard to the awareness about the ways of the influenza can spread, it is quite worrisome to know that a majority of the survey respondents did not know whether or not H1N1 transmit through droplets after coughing or sneezing. A majority of them however agreed that H1N1 can be transmitted by touching an infected person or using objects used by an infected person. Many respondents also were unsure whether sexual intercourse can spread H1N1 or not.

In term of characteristics of H1N1, a majority of respondents agreed that H1N1 has similar symptoms as common flu and it can cause death to an infected person. It is important thought to note that a majority of them also were unsure whether human can be infected via contact with pig and other animals. Also, a large number of respondents were uncertain whether eating pork can lead someone to have the disease. Only 54% of the respondents thought that H1N1 can be cured by vaccine. In addition, very few did not think that H1N1 can infect people more than once in life.

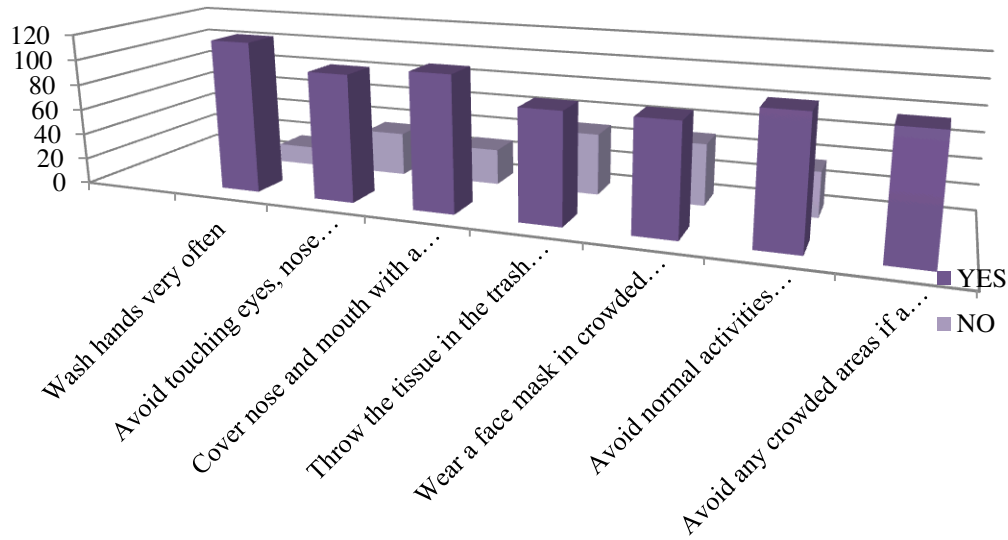
Majority of respondents agreed that H1N1 has similar symptoms as common flu and it can cause death to an infected person. However, most respondents were unsure whether human can be infected via contact with pig and animals other than pig and were also uncertain whether eating pork can infect someone. On top of that, most of the respondents thought that H1N1 can be cured by vaccine. In addition, very few did not think that H1N1 can infect people more than once in life.

Figure 8 shows the findings about the respondents' awareness and knowledge related to prevention measures whenever influenza outbreak is reported. The outcomes revealed a strong awareness among our respondents about the preventive measures to prevent the spread of the virus.

**Table 4** Knowledge and awareness about H1N1

| Descriptions  | Yes |    | No |    | Don't Know |    |
|---|-----|----|----|----|------------|----|
|   | n   | %  | n  | %  | n          | %  |
| Virus   | 100 | 76 | 4  | 3  | 28         | 21 |
| Immunodeficiency  | 69  | 52 | 17 | 13 | 46         | 35 |
| Inherited Disease <sup>1</sup>                                | 11  | 10 | 60 | 56 | 36         | 34 |
| Infectious Disease  | 93  | 70 | 6  | 5  | 33         | 25 |
| Droplets after coughing or sneezing                           | 53  | 40 | 11 | 8  | 68         | 52 |
| Touching an infected person                                   | 60  | 45 | 31 | 24 | 41         | 31 |
| Using objects used by an infected <sup>2</sup>                | 61  | 49 | 17 | 13 | 47         | 38 |
| Sexual intercourse <sup>3</sup>                               | 25  | 20 | 43 | 35 | 56         | 45 |
| Similar symptoms as common flu                                | 74  | 56 | 4  | 3  | 54         | 41 |
| An infected person can die <sup>4</sup>                       | 89  | 77 | 2  | 2  | 24         | 21 |
| Human can be infected via contact                             | 33  | 25 | 34 | 26 | 65         | 49 |
| Human can be infected via contact with animals other than pig | 21  | 16 | 43 | 33 | 68         | 52 |
| Human can infected through eating pork                        | 31  | 23 | 38 | 29 | 63         | 48 |
| H1N1 can be cured through vaccine                             | 72  | 55 | 13 | 10 | 47         | 35 |
| H1N1 can infect people more than once in life                 | 53  | 40 | 14 | 11 | 65         | 49 |

<sup>1</sup>Only 107 respondents answered the question; <sup>2</sup>Only 125 respondents answered the question; <sup>3</sup>Only 124 respondents answered the question; <sup>4</sup>Only 115 respondents answered the question;



**Figure 8** Prevention measures whenever outbreak is reported

*Sources to Obtain Information*

Based on the survey, we found that traditional mass media – radio and TV- is still the important information channels that a majority of the respondents relied on in obtaining information about H1N1. It is not surprising also to note that the respondents also relied on family, close relatives, friends or neighbors to obtain information. It is because the culture and the lifestyle of the Serian community are oriented towards communal, i.e., a common cultural traits of living in villages or long houses. The

outcomes from the survey also revealed that government health talks and campaigns, health posters and the talks by NGOs are viewed by some of the respondents as the typical sources of obtaining information. Further, despite only 26% of the respondents reported that they have an Internet access at home, yet we can safely assume that the new media, i.e., the Internet and the websites applications, has indeed is gaining its popularity among the rural communities to obtain information.

**Table 5** Source of information about H1N1

| Source Of Information  | n  | %  |
|--|----|----|
| Family/close relatives/friends/neighbours  | 92 | 70 |
| Radio  | 87 | 66 |
| TV   | 83 | 63 |
| Newspaper  | 64 | 45 |
| Government health talks and campaigns  | 46 | 35 |
| Internet and other government websites such as the website of the Ministry of Health | 35 | 27 |
| Poster   | 33 | 25 |
| Health Talk Seminar of Campaigns by NGOs   | 24 | 18 |
| Community leader   | 23 | 17 |
| Pamphlets  | 20 | 15 |
| Magazines and Newsletters  | 16 | 12 |
| Others including the use of mobile phone   | 7  | 5  |

### CONCLUSIONS

Overall, the outcomes of the survey reveal that a majority of our respondents has a relatively low level of knowledge and awareness particularly about the characteristics of the illness and how H1N1 virus can transmit. With regard to prevention measures, a majority of them reported good understanding and awareness about the effective self-care practices that can help to curb the potential spread of the influenza. Based on the findings, it is also sufficient to acknowledge that factors such as education level and income level can affect the attitudes of the rural communities in the context of rural communities of Serian. It is widely noted in the literature about the high mortality rate of outbreaks generally will involve those within the low and middle income populations. For example, in the case of the Spanish Influenza (H1N1) pandemic outbreaks that occurred between 1918 and 1920, it was reported that the global mortality to be approximately 62 million people, with 96% of those who died were belonged to the low- and middle-income populations in developing countries<sup>19</sup>. Also, our research findings that revealed about 49% of our respondents did not know and another 11% of the respondents did not think that people can be infected more than once should warrant the government particularly via the role of the Malaysia Ministry of Health to alert the public not to 'cool down' on prevention habits.

The following are our general recommendations reflecting on the findings of the research.

#### *Constructing Effective Risk Communication Strategies*

Effective risk communication strategies demand holistic initiatives that should involve various entities, institutions and media. In the context of our research for example, it is clearly shown that the utilization of traditional mass media is still not enough to enhance the understanding about H1N1, its risks and prevention measures. To address the needs of rural communities of Sarawak, we urge healthcare institutions, health practitioners, health campaigners as well as NGOs to continue to schedule regular health education talks and seminars to enhance the understanding and build strong awareness among the communities about the influenza risks. Also, public and private health campaigners should make a serious attempt to address the language problems and to take into account the education level of the rural communities in constructing

and delivering health campaigns and promotional materials. It is strongly recommended activities such as health talks and campaign materials (i.e., pamphlets and posters) should be delivered in the community own dialect and using the simplest terms that can be understood by them. Pamphlets and posters should be made readily available in the local dialect and should be displayed in all strategic locations including the villages especially the longhouse verandah where they use as a meeting place. It is also important to note that in the case of any pandemic outbreak, it is crucial to ensure the public to acquire basic knowledge about the etiologic agent of that particular disease, how the disease can spread and whether there is any effective medical treatment or vaccine to combat the spread of the disease. The public can effectively respond to combat the spread of the disease if they acquire this basic knowledge<sup>20,21</sup>. In the context of extreme influenza epidemic event, the healthcare workers should also do home visits and engage the affected families in the health talks. Prevention materials (face mask, hand glove and hand sanitizer) and the information about the correct ways of their usage should be readily supplied to these infected household and villages by the responsible agencies to prevent the spread. It is also worth to highlight here that the government should continue to roll-out infrastructures for Internet access and expand its coverage in the rural areas of Sarawak as part of educating the rural public. Such initiatives will enable integration and dissemination of health information via new social media and web applications can take place effectively and reach the rural communities quickly.

#### *Engaging Community Leaders and Village Health Representative*

Another important aspect to note is also about the important role of community leaders and appointed village health representatives (*Wakil Kesihatan Kampong*) in helping to disseminate information and raise awareness about any outbreak within the context of rural communities of Sarawak. Their roles should be acknowledged and seriously engaged in any construction of health campaigns and promotional materials targeted for the rural communities of Sarawak. More explicitly, they should be trained and briefed on the latest information regarding the disease and the prevention measures because they will function as an agent for disseminating information to quickly raise awareness about any potential spread of disease.

## ACKNOWLEDGEMENT

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